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09/747,515	12/21/2000	Andreas Arning	STL000011US2	3164

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EXAMINER
WONG, LESLIE

ART UNIT	PAPER NUMBER
2177	8

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/747,515	Applicant(s) ARNING ET AL.	
	Examiner Leslie Wong	Art Unit 2177	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 February 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 55-72 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 55-72 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. Receipt of Applicant's Request for Reconsideration, filed 24 February 2003, is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 55-57, 61-63, and 67-69 are rejected under 35 U.S.C. 102(e) as being anticipated by **Malloy et al.** (U.S. Patent 5,978,796).

Regarding claims 55, 61, and 67, **Mall y et al**. teaches a method, an apparatus and an article of manufacture of accessing a subject multi-dimensional database stored on a data store connected to a computer, comprising:

a). receiving an indication of a number of features of said subject multi-dimensional database to be identified (col. 2, lines 60-62);

b). performing feature identification to identify the indicated number of features (col. 2, lines 62-65); and

c). creating an index for the subject multi-dimensional database using the identified number of features (col. 6, lines 38-48).

Regarding claims 56, 62, and 68, **Malloy et al**. further teaches a step wherein creating the index comprises creating a multi-dimensional database that is derived from the subject multi-dimensional database (col. 6, lines 38-63).

Regarding claims 57, 63, and 69, **Malloy et al**. further teaches wherein receiving the number of features to be identified comprises receiving a parameter value (col. 2, lines 63-65).

4. Claims 58, 59, 64, 65, 70, and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Malloy et al**. (U.S. Patent 5,978,796) as applied to claims 55-57, 61-63, and 67-69 and in view of **Kothuri t al.** (U.S. Patent 6,381,605).

Regarding claims 58, 64, and 70, **Malloy t al**. does not teach a step wherein feature identification comprises generating an ordered list of multi-dimensional points.

However, **Kothuri et al.** teaches a step wherein generating an ordered list of multi-dimensional points (col. 10, lines 35-41)

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide the feature of generating an ordered list of multi-dimensional points to build index as taught by **Kothuri et al.** as this would allow all desired data to be retrieve in a single query and it is more efficient than invoking multiple queries against uni-dimensional indexes (col. 10, lines 30-34).

Regarding claims 59, 65, and 71, **Kothuri et al.** further teaches a step wherein further comprising creating the index using the list of multi-dimensional points (col. 10, lines 35-41).

5. Claims 60, 66, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Malloy et al**. (U.S. Patent 5,978,796) as applied to claims 55-57, 61-63, and 67-69 and in further view of **Agrawal et al.** (U.S. Patent 6,094,651).

Regarding claims 60, 66, and 72, **Malloy et al**. does not teach a step wherein the index stores deviation values for each of the identified number of features.

However, **Agrawal t al.** teaches a step for locating data anomalies in a K dimensional data cube (Fig. 6; col. 2, line 38 - col. 3, line 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the feature of exploring the performance data for finding regions of anomalies in the data as taught by **Agrawal et al.** in order to identify problem areas and/or new opportunities (col. 1, lines 34-36)

Response to Argument

6. Applicant's arguments filed 24 February 2003 have been fully considered but they are not persuasive.

Applicants argue that Malloy does not teach accessing a subject multi-dimensional database stored on a data store connected to a computer. Instead, Malloy teaches emulating a multi-dimensional database using a relational database. In response to the preceding arguments, the Examiner respectfully submits that in a multi-dimensional database, data are stored in the database in such a way as to be represented to the user as a hypercube or multi-dimensional array so that every data item is **located and accessed** based on the intersection of the members which define that item. The array comprises a group of data cells arranged by the dimensions of the data. (see Malloy Fig. 3). For example, a three-dimensional array can be visualized as a cube with each dimension forming an edge (i.e., Sales could be viewed in the dimensions of product, time, and additional dimension). A multi-dimensional database is a type of database that is optimized for data warehouse and online analytical processing (OLAP) applications. Multi-dimensional databases are often created using

the data from existing relational databases. The multi-dimensional database of the present invention is broadly claimed reads on Malloy's teaching of multi-dimensional database. There is no mention regarding whether or not the multi-dimensional database of the present invention is implemented using a relational approach (i.e., star schema) or a multi-dimensional approach (i.e., data cube specific to the Essbase product). Malloy further indicated that the capabilities of the prior art are the same as those of Arbor Software's Essbase OLAP software which uses to implement the data cube (col. 4, lines 50-54). Therefore, it is submitted that Malloy satisfies the limitation as claimed.

Applicants allege that Malloy does not teach or suggest any aspects related to features of a multi-dimensional database. Furthermore, the prior art does not receive an indication of a number of features of a subject multi-dimensional database to be identified, nor does it perform feature identification on the subject multi-dimensional database to thereby create an index for the subject multi-dimensional database. In response to the preceding arguments, the Examiner respectfully submits that Malloy teaches receiving an indication of features to be mined via interaction with the OLAP agent (col. 2, lines 58-65 and col. 10, lines 29-43). The number of features to be mined in the present invention is equivalent to prior art dimension identifiers which represent the points of interest or measures to be mined. The dimension chosen by the users resulted in a dense data block and the remaining dimension combinations that are used as sparse indices (i.e., sparse index keys or dimension identifiers) to select the dense data blocks by identifying dimensions. These sparse dimensions are used to index the

dense data blocks and a sparse index file contains information used to select the dense data blocks (col. 8, lines 2-15). Hence, Malloy discloses a step of receiving the features identification (i.e., dimension identifiers) and creating an index for the multi-dimensional database as claimed.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leslie Wong whose telephone number is (703) 305-3018. The examiner can normally be reached on Monday to Friday 9:30am - 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Breene can be reached on (703) 305-9790. The fax phone numbers

for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Leslie Wong
Patent Examiner
Art Unit 2177

lw
April 26, 2003

JEAN R. HOMERE
PRIMARY EXAMINER